Determinants of refugee naturalization in the United States

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The United States operates the world's largest refugee resettlement program. However, there is almost no systematic evidence on whether refugees successfully integrate into American society over the long run. We address this gap by drawing on linked administrative data to directly measure a long-term integration outcome: naturalization rates. Assessing the full population of refugees resettled between 2000 and 2010, we find that refugees naturalize at high rates: 66% achieved citizenship by 2015. This rate is substantially higher than among other immigrants who became eligible for citizenship during the same period. We also find significant heterogeneity in naturalization rates. Consistent with the literature on immigration more generally, sociodemographic characteristics condition the likelihood of naturalization. Women, refugees with longer residency, and those with higher education levels are more likely to obtain citizenship. National origins also matter. While refugees from Iran, Iraq, and Somalia naturalize at higher rates, those from Burma, Ukraine, Vietnam, and Liberia naturalize at lower rates. We also find naturalization success is significantly shaped by the initial resettlement location. Placing refugees in areas that are urban, have lower rates of unemployment, and have a larger share of conationals increases the likelihood of acquiring citizenship. These findings suggest pathways to promote refugee integration by targeting interventions and by optimizing the geographic placement of refugees.

immigration | refugees | integration | naturalization | resettlement

The United States operates the world's largest refugee resettlement program, having resettled over 3 million refugees since 1975. While resettlement provides humanitarian protection and the chance to begin a new life, refugees nevertheless face significant challenges after arrival. Many arrive having experienced trauma and interrupted education and lacking knowledge concerning English and American culture. While refugees frequently experience significant psychological and physical hardship in their origin countries, they are also likely to encounter discrimination, lack of opportunity, and poverty within their new environment (1–3).

The challenges that refugees face after arrival provide clear incentives for governments and nongovernmental organizations to facilitate refugees' adaptation to life in the United States. However, these barriers to integration also raise questions for policymakers. Every year, policymakers decide how many refugees to admit, from which sending countries, and where to send them in the United States. Although these decisions are primarily made on the basis of humanitarian need, expectations concerning whether refugees will be able to attain self-sufficiency and integrate into American society also play a role in shaping the contours of the program (4, 5). Moreover, whether refugees successfully integrate can be expected to influence public support for refugee resettlement.

However, despite the scale and salience of the resettlement program and the policy challenges that surround it, policymakers and scholars currently lack reliable data on the degree to which refugees succeed in adapting to life within the United States. Refugee outcomes are limited to short-term employment indicators and are only directly tracked by refugee resettlement agencies for

the first 90–180 d, after which refugees and their families are expected to transition to economic self-sufficiency. The scattered data that exist after this initial period largely consist of anecdotal evidence, convenience samples (6), or imputed data from partial population surveys (7, 8). None of these sources permits a direct and accurate portrait of the degree to which refugees integrate into American society.

The lack of data on long-term integration outcomes is concerning from a policy perspective. It means that policymakers cannot learn from past successes or failures and harness this evidence in the design of refugee programs. Knowledge of outcomes would also permit policymakers to directly identify subpopulations of refugees who require targeted support or to implement innovations that could improve long-term integration outcomes. The absence of systematic evidence on integration outcomes also increases the challenge of maintaining political support in hosting communities.

To address this evidence gap, we draw on linked administrative data to provide a systematic analysis of the long-term integration of refugees within the United States. We focus on naturalization, which the scholarly literature has identified as a key measure of the political, civic, and social integration of immigrants. In contrast to previous approaches, we directly measure naturalization rates using administrative data maintained by the Office of Immigration Statistics (OIS) at the Department of Homeland Security. These data span the complete population of refugees resettled in the period between 2000 and 2010, and include background characteristics as well as linked naturalization outcomes.

Citizenship is widely regarded as an important milestone of immigrant integration, and naturalization rates are commonly

Significance

Despite the scale of the US refugee resettlement program, policymakers and the public lack systematic information on how refugees adapt to their new environment. We focus on naturalization as a key measure of integration and draw on administrative data to provide direct estimates of the naturalization rates among refugees. Our results show that, on average, refugees acquire citizenship faster than other lawful permanent residents. We also identify the set of factors that promote or constrain naturalization among refugees. These findings have implications for policymakers seeking to improve the integration of refugees within the United States.

used by governments and intergovernmental organizations as one core measure of integration (9–12). Moreover, citizenship provides an entrée into a country's civic, political, and economic life, thereby furthering the process of integration (13, 14). Although not all immigrants choose to naturalize, the decision to obtain citizenship does provide a costly signal of a long-lasting commitment to the host country. Because all resettled refugees have the option to acquire citizenship after 5 y in the United States, whether refugees choose to naturalize offers a concrete behavioral measure of long-term integration.

Beyond systematically documenting the naturalization status of refugees, we also explore the factors that determine citizenship acquisition. Building on studies of immigrant naturalization, we focus on three major categories of determinants. First, we examine whether sociodemographic characteristics condition the likelihood of naturalization. [In exploring the correlates of refugee naturalization, we follow the framework developed by Waters and Pineau (12).] If the decision to naturalize reflects the ease of integrating more generally, we would expect refugee naturalization to be a function of factors that have been theorized to promote successful integration more broadly, including gender, education, the strength of previous ties to US citizens, the age at which refugees arrived in the United States, and family size, among others (12).

Second, we examine the impact of countries of origin on naturalization rates. Prior research points to the ways in which immigrants' home countries may influence the choice about whether to acquire citizenship in the host country. Less favorable conditions in the home country may increase the probability of naturalization, simultaneously limiting the ability of immigrants to return home and increasing the pressure on them to obtain the benefits of citizenship (15). For refugees who have fled violence or suffered trauma in their country of origin, these pressures may be more variable and extreme. Country of origin may also capture differing cultural values and practices that affect the desirability of naturalization or impede the process of integration, such as dual-citizenship laws.

Third, we examine how the social context in which refugees are embedded shapes the decision to naturalize (16–18). The local environments in which refugees are initially placed differ from one another with respect to employment opportunities, the policy environment, and the density of conationals and immigrant support networks in the local community. Because decisions about initial placement are made by the US government and refugee resettlement agencies, evidence that geographic context is relevant for downstream integration outcomes is relevant to the policy process.

Results

Fig. 1 reports the naturalization rates for resettled refugees who arrived in the United States between 2000 and 2010, broken down by year of arrival. We find that refugees naturalize at high rates: 66% of refugees who entered the United States during this period acquired American citizenship by 2015.

We also find that naturalization rates increase with time spent in the country. Seventy-seven percent of refugees who arrived in 2000 had acquired citizenship by 2015. In contrast, the naturalization rate is 46% for refugees who arrived in 2010. Refugees in this latter group only had a 1-y window in which they were eligible for naturalization. Nearly half of the refugees in this arrival cohort naturalized within 1 y of becoming eligible.

To place these naturalization rates in a broader context, we draw on administrative naturalization records to compare refugees with other immigrants who entered the United States during the same period. To adjust for differences in eligibility between the two groups, we computed 6-y naturalization rates for the 2000–2010 lawful permanent resident (LPR) cohorts. These rates measure the fraction of immigrants who acquire
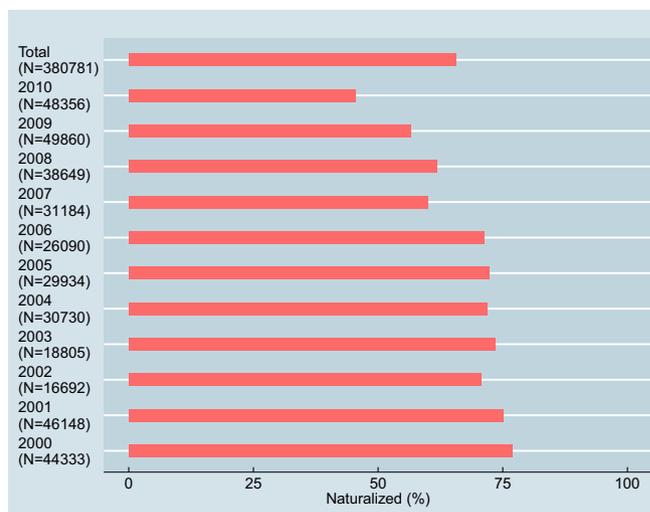

Fig. 1. Refugee naturalization rates by year of arrival. The naturalization rate is displayed, as of 2015, for refugees who arrived in the United States between 2000 and 2010.

citizenship within 6 y after receiving their status as LPRs. The 6-y naturalization rate is 29% for all eligible nonrefugee immigrants ($N = 8,308,393$), but it is 45% among refugees. (Note that resettled refugees become eligible for citizenship 5 y after entry, so their first year is counted toward the 5-y wait time even though they become permanent residents only after a year. Therefore, the 2000–2010 refugee arrivals are comparable in eligibility to the 2000–2010 LPR cohorts.) Although refugees differ from those who pursue naturalization after becoming LPRs, this comparison suggests that refugees naturalize faster and at higher rates than nonrefugee immigrants from the same cohorts.

We next examine how naturalization rates vary across refugees. Fig. 2 reports the effect estimates from a linear probability model that regresses the naturalization outcome on a full set of refugee characteristics measured from the refugee arrival data, as well as county of arrival and resettlement agency fixed effects (details are provided in *Materials and Methods*).

The estimates suggest a high degree of heterogeneity in naturalization outcomes. First, we find that individual characteristics significantly shape naturalization rates. Female refugees are about eight percentage points more likely to naturalize than male refugees. Refugees with higher education naturalize at elevated rates: University graduates exhibit naturalization rates that are 26 percentage points higher than those without any formal education. The data also suggest a U-shaped relationship between age at arrival and naturalization rates: Refugees who arrive in their 30s and 40s have the lowest naturalization rates, and those who arrive in their 50s and 60s have the highest naturalization rates, with those who enter in their 20s or younger falling in between. Longer residency is a strong predictor of naturalization rates, even when controlling for the other factors: Those with 13–15 y of residency are about 26 percentage points more likely to naturalize than those with only 5 y of residency.

In contrast, we find almost no variation in naturalization rates with respect to familial characteristics, such as family size. We similarly find only small differences in naturalization rates between the principal applicant and other family members: Compared with the principal applicant, children are about three percentage points more likely to naturalize, while spouses and parents are about three percentage points less likely to naturalize. Finally, whether a refugee family enters the United States with previous ties to US citizens has very little impact on rates of naturalization: The difference between refugees with and without US ties is only one percentage point. (US ties are defined as
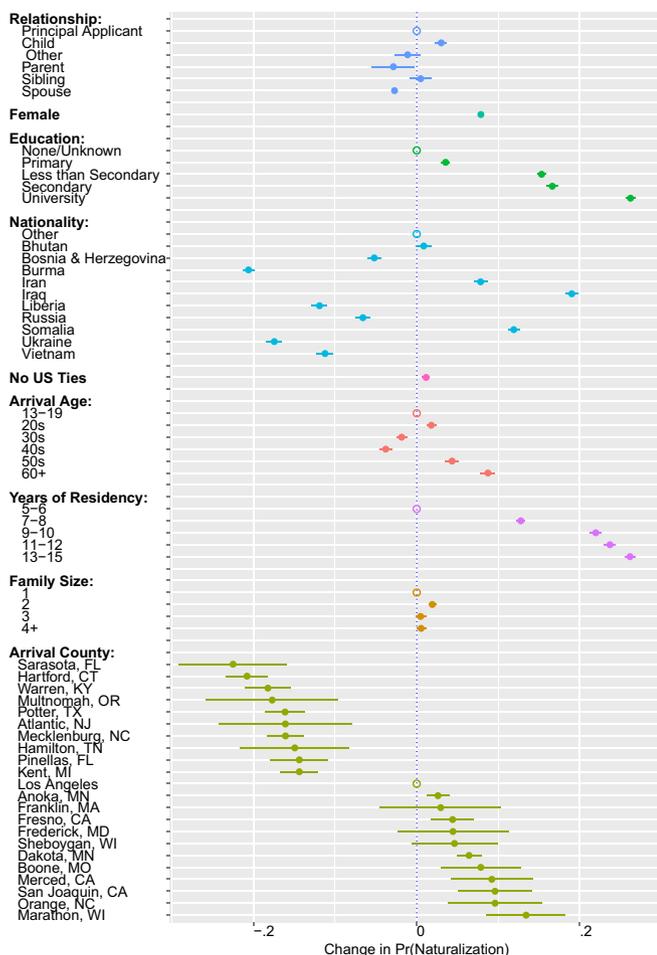
Fig. 2. Effects of refugee characteristics on probability (Pr) of naturalization. Estimates are from a linear probability model with clustered SEs; bars represent 95% CIs. Unfilled points without horizontal bars denote the attribute value that is the reference category for each characteristic. The sample consists of refugees resettled between 2000 and 2010 (N = 380,781).

family members or close friends who already live in the United States and provide assurances to the US government that they will help facilitate the settlement of arriving refugees.)

Finally, we find that country of origin and the initial resettlement environment have an impact on naturalization outcomes. Iraqis, Somalis, and Iranians are between eight and 19 percentage points more likely to naturalize than other refugees in the reference category. By contrast, refugees from Burma, the Ukraine, Liberia, or Vietnam are between 11 and 21 percentage points less likely to naturalize. With respect to initial placement location, Fig. 2 shows the estimates for the counties with the 10 highest and 10 lowest naturalization rates. On average, the difference in the naturalization rates for refugees assigned to the county with the lowest and the highest naturalization rates is about 36 percentage points after controlling for the other characteristics.

To examine the robustness of the findings, we replicated the analysis using only the subsample of refugees who are matched into the lawful permanent residency records; the results are similar to the ones we obtain for the whole sample (*SI Appendix,* Fig. S1). This rules out the possibility that the results are driven by cases that cannot be matched across datasets. We also replicated the model for the subsamples of single refugees who arrived without other family members, and the findings are similar to those in the full sample (*SI Appendix,* Fig. S2). This rules out

the possibility that the results are driven by unobserved within-family dynamics. Finally, we have replicated the model using state of arrival as opposed to county of arrival fixed effects, and the results are again similar (*SI Appendix,* Fig. S3). The difference in naturalization rates between the arrival state with the highest naturalization rate (Minnesota) and the state with the lowest naturalization rate (Connecticut) is 19 percentage points, which is still substantial but somewhat lower than the county level difference, given that states are a more aggregated measure of local conditions.

What factors account for the significant effect of the initial resettlement location? To explore the potential mechanisms through which locations might affect naturalization rates, we focus on three factors that have been hypothesized to shape immigrant and refugee integration. First, following research that has shown long-term negative effects of arriving in areas with high unemployment (19), we measure the local unemployment rate in the year of arrival. High unemployment rates at arrival might increase the difficulty of finding entry-level positions and achieving economic self-sufficiency, which may, in turn, delay other aspects of social and cultural integration. Second, we measure the percentage of residents in the resettlement location who were born in the refugees' origin country. Conationals, especially those with a shared language, can be expected to provide social networks that may assist in employment (20, 21). However, other research has hypothesized that the presence of ethnic enclaves may reduce incentives to integrate within the host society (22, 23). Finally, we measure the percentage of urban population within the county of arrival. Urban areas typically provide a dense network of social services, transportation, and job opportunities, and are also likely to have a higher density of immigrant service providers that can help facilitate naturalization (24, 25). Conversely, urbanized areas also often have a high cost of living and a surplus of low-skilled labor, which may reduce the integration prospects of refugees. All three geographic covariates are measured at the year of the refugee's arrival within the United States (details on the measures are provided in *SI Appendix*). [For this specific analysis, we need to limit the sample to refugees from the nine largest sending countries in our data for which the share of conationals can be calculated (Bosnia and Herzegovina, Burma, Iran, Iraq, Liberia, Russia, Somalia, Ukraine, and Vietnam).]

To assess the explanatory power of these local characteristics, we replicate our baseline specification but replace the county fixed effects with the geographic measures (all other predictors remain in the model). To avoid strong functional form assumptions, we discretize the geographic measures by dividing the observations into four equally sized bins (low, medium low, medium high, and high). The estimated effects of the geographic measures are shown in Fig. 3. Controlling for individual-level characteristics, naturalization rates are about three percentage points lower for refugees initially placed into areas with high versus low rates of unemployment. We find a U-shaped relationship between levels of urbanization and naturalization success. Naturalization rates are highest for refugees placed into the least and most urban counties, but are about one percentage point lower for refugees placed into counties with a moderate level of urban density. Finally, we find that a higher share of conationals is associated with higher naturalization rates: Refugees who are placed in counties with a high share of conationals are about three percentage points more likely to naturalize than refugees placed in counties with a low share of conationals. While resettlement communities differ along additional dimensions, these results suggest that economic conditions, urban density, and ethnic networks systematically explain some of the variation in naturalization success.
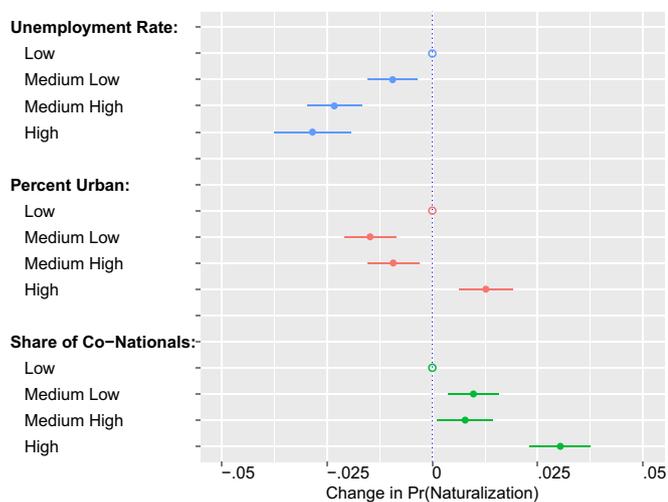
Fig. 3. Effects of initial settlement location characteristics on probability (Pr) of naturalization. Estimates are from a linear probability model with clustered SEs; bars represent 95% CIs. The unfilled points without horizontal bars denote the attribute value that is the reference category for each characteristic. The model includes all individual-level characteristics as controls. The sample consists of refugees resettled between 2000 and 2010 (N = 264,358).

Discussion

This study provides population-level evidence on refugees' long-term integration in the United States measured through naturalization. Our approach improves upon existing research that attempts to capture medium- and long-term outcomes for refugees by imputing refugee status within partial population samples. By contrast, using direct behavioral measures of naturalization, we characterize an integration outcome for all refugees who were resettled between 2000 and 2010.

The study makes several contributions that have implications for theory and policy. One important finding is that refugees naturalize at high rates despite the fact that they face significant barriers to integration after arrival, including psychological and physical hardship and an unfamiliarity with the language and culture. In fact, after accounting for time spent in the country, we find that refugees are significantly more likely to acquire citizenship than immigrants entering the country via other programs. These results provide evidence that when it comes to naturalization, refugee status does not serve as a significant impediment to long-term integration within the United States. This finding is also consistent with naturalization rates for earlier periods estimated from survey data based on imputed refugee status (26).

Despite the high naturalization rate, our results also suggest significant heterogeneity across refugees. These findings are broadly consistent with previous literature on the determinants of naturalization rates for other immigrant groups (18, 27–29). The longer immigrants are in the country, the more time they have to learn about the context, acquire the language, improve their economic situation, and subsequently acquire citizenship (30). We find that the same holds for refugees, even though they typically arrive with fewer resources and local networks than other immigrant groups. High levels of education at arrival are strongly correlated with elevated naturalization rates, a finding consistent with the hypothesis that those who can successfully integrate economically find citizenship more attractive, and also are more likely to be able to afford it and navigate the application process. We also find that female refugees are more likely to naturalize, which could be a reflection of their role in the family

unit or of increased personal autonomy that accompanies the immigration process (31).

However, several of the results differ from theoretical expectations. For instance, we find that age at arrival exhibits a U-shaped relationship with naturalization success. Older refugees are most likely to naturalize, while those in their 30s and 40s are least likely to naturalize even though their higher levels of participation in the labor market may ease their acquisition of English and increase the returns to citizenship. Also, we find that refugees with preexisting ties to US citizens are not more likely to naturalize than "free cases" who have no such ties. This runs counter to the idea that US ties provide refugees with important support networks to facilitate their integration success or may reflect variation in the depth of connection between refugees and their US ties.

With respect to origin effects, the previous literature has largely focused on the low rates of naturalization among Mexicans, compared with other nationalities (32, 33). When examining refugees, we find that origin effects are also substantial, but they are not easily explained by existing theories. While religious differences and distinct cultural values might be hypothesized to reduce naturalization rates, we find that Iranian, Iraqi, and Somali refugees are the most likely to naturalize, while refugees from Burma and the Ukraine are the least likely to naturalize. These results are inconsistent with arguments that more culturally similar refugee populations (e.g., in terms of language, religion) are more likely to naturalize. They are also difficult to reconcile with the "irreversibility" hypothesis, which suggests that refugees are more likely to naturalize if a return to their home country is difficult because of distance/cost, conflict, and other unfavorable conditions. [In a study of West African regional migration, Adida (34) finds that culturally similar groups are the least likely to integrate into their host country.] For example, Burmese refugees face significant impediments in returning to their country of origin, yet they exhibit low rates of naturalization. Structural differences, such as dual-citizenship laws, only explain a small part of the differences we observe in naturalization rates across countries of origin (details are provided in *SI Appendix*). Scholars of naturalization have long puzzled over origin effects, given the significant observed differences in naturalization rates, recognizing that these likely proxy for unmeasured behavioral variables (e.g., strength of national identity, other attachments to the country of origin) that are difficult to isolate with the existing administrative data (35).

A third finding is that the initial resettlement location plays a role in shaping the likelihood of naturalization, independent of sociodemographic characteristics. This finding is consistent with previous work suggesting that initial experiences within a host country can exert path-dependent effects on integration trajectories (14, 21, 36–39). While contextual effects encapsulate a variety of local factors, our results indicate that refugees are systematically more likely to naturalize when initially placed in locations with low unemployment rates and dense urban settings. Contra arguments that ethnic enclaves reduce the propensity to integrate (23, 40, 41), we observe that the presence of conationals within the initial placement location increases the likelihood of naturalization. This parallels work on immigrant communities that underscores the ways in which coethnic concentration may generate better socioeconomic outcomes (42) and coethnic networks may facilitate, rather than hinder, the naturalization process (25). We also find that refugees resettled in suburban areas have lower naturalization rates than in those cities. High rates in urban areas may reflect the relative availability of immigration services in those communities (43, 44). Though these measures capture important aspects of the geographic determinants of refugee naturalization, the estimated magnitudes are relatively small, suggesting that other as yet unmeasured aspects of local geographies also exert an influence on naturalization decisions.

Overall, our results are broadly consistent with a conceptual model of naturalization that emphasizes the costs and benefits faced by refugees (43). In this framework, an individual's assessment of costs and benefits is a function of her sociodemographic characteristics, the context from where she came, and the social environment in which she is resettled. As in studies of immigrant integration, individual factors that decrease the costs of obtaining citizenship, including education and length of residency, are robustly correlated with refugee naturalization. The observed differences in naturalization by country of origin likely capture differing assessments of the return to naturalization: Some refugees may be more likely to value US citizenship and believe they will not return to their home country, while others wish to maintain strong ties to their country of origin. Finally, the impact of social and contextual factors in receiving communities, including employment rates and the density of conationals, is consistent with prior research that emphasizes how the social and civic context shapes the costs and benefits of naturalization.

Apart from contributing evidence on refugees to the literature on naturalization, the findings we report also suggest direct policy implications. The divergence in naturalization rates across demographic characteristics provides the potential for targeted interventions aimed at facilitating naturalization among subpopulations with lagging integration outcomes, such as refugees with low levels of education as well as those from specific nationality groups. While additional research is necessary to determine the precise nature of the barriers to naturalization that these subgroups face (45), the data suggest that their low levels of naturalization merit a policy response, given the potential for naturalization to improve the economic standing of immigrants (46).

Finally, the influence of geographic factors suggests that there is potential to optimize the integration of refugees by modifying placement policies. Although the effects of each geographic factor are small in magnitude, in tandem, the systematic relationship between local characteristics and subsequent naturalization rates suggests an opportunity to optimize public policies to support refugee integration. The Department of State, in conjunction with nine voluntary resettlement agencies, approves a set number of resettlement locations and their yearly capacity for resettlement each fiscal year. While the existing allocation process is largely driven by capacity constraints, a data-driven assignment policy that takes integration into account could offer a cost-effective means to improve outcomes (47).

These results also suggest important avenues for future research. Linked administrative data could be extended to other long-term integration measures, including data on tax contributions, employment, or welfare dependency. With this data, it would be possible to examine the causal impacts of specific resettlement policies on refugee integration. While the US government and resettlement agencies have made significant investments in policies that are designed to improve refugee integration, the causal impacts of these programs have not been systematically evaluated. Our approach opens the door for conducting evaluations to learn about the returns to such interventions.

Materials and Methods

Data. Our dataset combines three administrative datasets held by the OIS with US Census data. The first dataset, from the Worldwide Refugee Admissions Processing System of the Bureau of Population, Refugees, and Migration of the US Department of State, includes all refugees resettled in the United States from 2000 to 2015. These data contain refugees' selected sociodemographic characteristics as measured before arrival, including nationality, gender, age, education, family size, relationship to the principal applicant, and whether the family had existing ties to individuals within the United States. The data also include the date of arrival, voluntary refugee resettlement agency handling the case, and initial resettlement location. We include all refugees within the sample, with the exception of Cubans and Haitians who arrived in the United States under the protection of specific programs.

The second dataset uses data from the Computer-Linked Application Information Management System (CLAIMS) and the Electronic Immigration System of the United States Citizenship and Immigration Services (USCIS), which maintains information from applications for LPR status. Refugees are required by statute to apply for LPR status 1 y after admission to the United States. Using Alien Registration Numbers (A-numbers), unique identifiers assigned by USCIS, we merged the LPR and refugee arrival datasets. Ninety-seven percent of refugees were successfully merged into the LPR dataset, and the match rates are stable across years. The remaining 3% of refugees who did not match to the LPR dataset might have left the United States or might be deceased, or there might have been inconsistencies in the A-number records such that they cannot be merged.

The third dataset also uses data from the CLAIMS of the USCIS. These administrative records consist of information taken from N-400 applications, naturalization records, which we also merged using A-numbers. Naturalization records are filed on a rolling basis upon the completion of a successful citizenship application. Since refugees are first eligible to naturalize 5 y after arrival, we restrict our analysis to refugee cohorts arriving between 2000 and 2010. We remove unaccompanied minors from the sample, as well as all children who arrived under the age of 13 y. These individuals were not of legal age to independently apply for naturalization 5 y after arrival. As a result, naturalization rates among this group may be misleading, given that permanent resident minors automatically receive citizenship following the naturalization of a parent.

To examine the influence of geographic factors, we merged the refugee data with location data. We mapped each city where refugees were assigned to the appropriate county using US Census data. We obtained unemployment statistics from the Department of Labor's Local Area Unemployment Statistics, at the county level. (There were some errors in city names, which prevented matching to counties and these data were dropped from the analysis. We present results in *SI Appendix* using states instead of counties.) Estimates on conational shares and urban population are drawn from US Census data. To obtain data on conational shares, we mapped cities to public use microdata areas (PUMAs) using 2000–2010 consistent indicators and crosswalk files provided by the Missouri Census Data Center (MABLE/Geocorr2k database). In cases where cities mapped to multiple PUMAs, we weighted indicators on the basis of the population share in 2000. If cities did not appear in the crosswalk file, we mapped them directly to PUMAS using a Federal Information Processing Standards-PUMA crosswalk, selecting the PUMA that covered the largest proportion of the respective county. Given that census data were unavailable at lower levels of aggregation between 2001 and 2009, we interpolate between the 2000 US Census (5% sample) and the 2009 and 2010 5-y American Community Survey to construct yearly estimates. Microdata samples were provided and harmonized by Integrated Public Use Microdata Series. We also remove counties that received less than 200 refugees over the entire sample time period. Note that no conational shares are available for refugees from Bhutan, given that this nationality is not separately reported in the census data.

Outcomes. Our main outcome of interest is whether a refugee became naturalized by 2015. We generate a binary outcome that is coded as 1 for refugees who have a naturalization record and as 0 for those who do not. For robustness, we also replicate the analysis using only the subsample of refugees who did have a matching record in the lawful permanent residency database. Since these refugees matched into the lawful permanent residency data, it is very likely that they would also match into the naturalization data in the event that they naturalized. Although all refugees within our sample were eligible to apply for citizenship by 2015, the data are right-censored. Accordingly, we also present 6-y naturalization rates by arrival cohort as an alternative measure. For these estimates, a refugee is coded as 1 if she naturalized within 6 y of arrival or as 0 otherwise.

Statistical Model. Our baseline specification is a linear probability model where we regress the naturalization outcome on all individual- and case-level variables as predictors, with SEs clustered by case. The predictors include age at arrival, gender, education, case size, relationship to principal applicant, nationality, and residency, as well as county of arrival and resettlement agency fixed effects. To enhance interpretability and avoid strong functional form assumptions, we discretize the continuous predictors as follows: Age at arrival is coded into six bins (13–20 y, 21–30 y, 31–40 y, 41–50 y, 51–60 y, and 60+ y), residency is coded into five bins (5–15 y), education is coded into five bins (no schooling/unknown, primary, less than secondary, secondary, and university), and case size is coded into four bins (one, two, three, and four or more persons); for the nationalities, we code dummies for each of the 10 largest refugee nationalities and the remainder are assigned to the "other" reference category.

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